Engineering Education in the Era of ChatGPT: Promise and Pitfalls of Generative AI for Education

Abstract

Engineering education is constantly evolving to keep up with the latest technological developments and meet the changing needs of the engineering industry. One promising development in this field is the use of generative artificial intelligence technology, such as the ChatGPT conversational agent. ChatGPT has the potential to offer personalized and effective learning experiences by providing students with customized feedback and explanations, as well as creating realistic virtual simulations for hands-on learning. However, it is important to also consider the limitations of this technology. ChatGPT and other generative AI systems are only as good as their training data and may perpetuate biases or even generate and spread misinformation. Additionally, the use of generative AI in education raises ethical concerns such as the potential for unethical or dishonest use by students and the potential unemployment of humans who are made redundant by technology. While the current state of generative AI technology represented by ChatGPT is impressive but flawed, it is only a preview of what is to come. It is important for engineering educators to understand the implications of this technology and study how to adapt the engineering education ecosystem to ensure that the next generation of engineers can take advantage of the benefits offered by generative AI while minimizing any negative consequences.